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author loves San Diego and every phase of its climate and weather is obvious on every page. He even speaks of the "desirable features" of the desert wind, and of the "beneficial effects" of the famous coast fogs. There are some unusually good cloud pictures, several of which give an excellent idea of the general situation of the city. So up to date is the little volume that the famous January "freeze" of the present year is mentioned. On this occasion the San Diego record of not having had a minimum temperature below 32° within the period of observation was broken. The minimum in January, 1913, was 25°. The book is published by the San Diego Chamber of Commerce, and is therefore pretty clearly intended for advertising purposes. But there is little or no undue exaggeration in it. Mr. Carpenter is to be congratulated upon having written so delightful an account, and so complete a one, of San Diego's weather and climate. We wish there might be more like it for other places.

R. DEC. WARD.

**Animal Communities in Temperate America as Illustrated in the Chicago Region.** A Study in Animal Ecology. By Victor E. Shelford. xiii and 362 pp. Map, ill., index. *Geographic Society of Chicago Bull.* No. 5. Univ. of Chicago Press, 1913. \$3.22. 10 x 7.

This study in animal ecology is based upon material accumulated during ten years of field study. The material was collected in the area about Chicago—an area some 80 miles wide and 134 miles long.

The general principles of animal ecology are discussed in the first six chapters. The opening chapters deal with man's relations to nature,—especially to animals. This includes both the economic relations of animals to man as well as the influence of man on animals.

The following two chapters deal with the relations of animals to their environment together with the different types of environments. The author mentions the most important factors of the environment as being "water, atmospheric moisture, light, temperature, pressure, oxygen, carbon dioxide, nitrogen, food, enemies, materials used in abodes, etc. In nature the combinations of these in proportions requisite for the abode of a considerable number of animals are called "environmental complexes." The author states it as his purpose to consider animals as inhabiting environmental complexes, rather than to isolate their responses to various single factors. He further calls attention to the distinction between "local" and "climatic" environmental complexes. Those environments coming under the head of climatic, are such as climate proper, and such features as types of vegetation of any considerable extent, as "steppe," "deciduous forests," etc. Local environments lie within the climatic, as for example, such local conditions as ponds, lakes, streams, soils, exposure, etc. It will be observed that these are geographical in nature.

The Chicago area is represented by two geographical environmental complexes,—the savanna, and the deciduous forest,—badly broken up by many local complexes.

The author now considers the various communities of ponds, lakes, streams, swamps, forests, thickets, prairie, etc., from the standpoint of reactions to their environments. Tabulated lists of animal data are given at the ends of each of these chapters. These include the common and scientific names of the animals found, the habitat from which collected, and the particular local environment. These habitat records are very exhaustive and include the names and environments of nearly 1,000 species of animals.

There are over 300 splendid animal figures and several maps and diagrams, thus making the volume of great value not alone to teachers and collectors, but also to students of geographical distribution.

This excellent bit of pioneer work concludes with a chapter on a general discussion of (a) the relations of different communities to one another, (b) the laws governing distribution, (c) a discussion of the relations of ecology to broader geographical problems. This latter discussion is especially interesting and suggestive. He says "the relations of ecology to human geography are especially intimate. The parallelism between the geographical phenomena in animals and the relations of culture to environment lie not in color and structural adaptations of animals, but in the *behavior-characters* of

animals which enable them to live under a given set of conditions, and the *behavior* which those conditions produce. Finally, animal ecology offers the material and methods with which many ideas of geography may be experimentally verified.

This book is unique in that it is a pioneer of its sort and the first serious attempt to treat of the physiology of organisms and of animal communities in such shape as to serve as an adequate text and reference work for students. There is an adequate bibliography of 214 references, as well as author and subject indices.

R. W. SHARPE.

**Geology of the Columbus Quadrangle.** By Clinton R. Stauffer, George D. Hubbard and J. A. Bownocker. viii and 133 pp. Maps, illus., index. Bull. 14, 4th Series, Geol. Surv. of Ohio. Columbus, Ohio, 1911. 9½ x 6½.

Part I, Historical Geology, was prepared by Dr. Stauffer; Part II, Physiography and Surficial Geology, by Prof. Hubbard, and Part III, Economic Geology, by the State Geologist. Part II is the longest of the sections. The report is designed primarily for the use of school and college students and teachers. The authors doubtless had in mind the service which such a report might be to classes in the state university.

In Part II, Prof. Hubbard describes and interprets the present general topography, and gives an account of the pre-Wisconsin, the Wisconsin and the post-Wisconsin changes in topography. He finds satisfactory evidence of two glacial epochs, widely separated in time, but is not sure of more than two. Buried valleys are numerous; at least thirty-two, crossed by present streams, are noted. The many moraines of the area and their attendant features are described in considerable detail. The relatively small area mapped makes possible an amount of detail not usually found in state reports. The volume constitutes an excellent field manual, and the painstaking quality of the work, the three maps in the pocket, and the exceptionally good plates, all reflect credit upon the authors.

R. H. WHITEBECK.

## AFRICA

**Camera Adventures in the African Wilds.** Being an Account of a Four Months' Expedition in British East Africa, for the Purpose of Securing Photographs of the Game from Life. By A. Radelyffe Dugmore. xix and 233 pp. Ills. Doubleday, Page & Co., New York, 1910. \$6. 11 x 8½.

Noteworthy both for its remarkable photographs and its informing letterpress. The author was once an enthusiastic Nimrod but in recent years he has found far greater pleasure in hunting with the camera. He has to-day an international reputation for the superiority of his photographs of animals, nearly all of them taken in the open and, in many cases, when the subject of the picture was too near the camera for the comfort of nervous photographers. A large number of these photographic reproductions appear in this book without retouching or other improvement. The book is thus a vivid record of the most conspicuous animal life of British East Africa and as such will be more valuable as time goes on for the wild life that has added so much to the repute of this part of Africa is destined largely to disappear as the land becomes more and more devoted to the service of man. The pictures also show many phases of the native life. The textual information, in point of interesting and informing quality, is worthy of the pictures.

**The Fetish Folk of West Africa.** By Robert H. Milligan. 328 pp. Ills. Fleming H. Revell Co., New York, 1912. \$1.50. 8½ x 6.

It is seldom that records of missionary service are reliable material for social and ethnological study, but the readers of this delightful volume on the Fetish Folk of West Africa will quickly recognize an exception. The warp and woof of the book is a survey of the life, habits, and social customs of the